EPA Region 7 TMDL Review

TMDL ID	336	*Water Body ID*	IA 04-EDM-00290
Water Body Name	Tuttle Lake (aka Okamanpedan Lake)		
Pollutant	Algae and Turbidity		
Tributary	East Fork Des Moines River, Clayton Lake. Dutton Slough, Unnamed creek		
State	Iowa	*HUC*	0710000301
Basin	East Fork Des Moines River		
Submittal Date	12/28/2004		
Approved	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

The TMDL for Tuttle Lake was formally submitted by the Iowa Department of Natural Resources (IDNR) in a letter dated December 14, 2004 and received by EPA on December 28, 2004. A revised TMDL was received by email attachment on January 3, 2005.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Pollutants causing water quality impairments are algae and turbidity associated with excessive phosphorus loading through the use of the Trophic State Index (TSI). Decreasing the phosphorus load to the 33,580 pounds per year will result in attainment of water quality standards.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Water quality standards and beneficial uses are described as well as applicable narrative criteria. The designated uses are Primary Contact Recreation (Class A1), Aquatic Life (Class B (LW)) and High Quality Resource (HQR). The Class A and B uses were assessed as "partially supported" in 2002. Phase I targets for this phased TMDL are established based on improving the lake's trophic state to correspond to a Trophic State Index (TSI) value for total phosphorus of <70, which will result in TSIs for both chlorophyll and Secchi depth of <65.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The State of Iowa does not have numerical water quality criteria for algae or turbidity. The TMDL uses the surrogate measure of TSI which links phosphorus concentrations to algal and turbidity conditions. By reducing the TSI for total phosphorus to <70 the TSIs for chlorophyll and Secchi depth should be reduced to <65 based on the relationships seen in this lake.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

Annual loading comes from two point sources and nonpoint sources including runoff, groundwater, internal load and airborne deposition. The point sources are from wastewater treatment plants for the cities of Ceylon (Minnesota) and Sherburn (Minnesota). Existing loads and NPDES IDs are included in the TMDL for informational purposes. Nonpoint sources include row crop agriculture, an open feed lot, septic systems, pit toilets and waste from wildlife and pets. The majority of the watershed is in Minnesota and has not been surveyed by IDNR but there are numerous Confined Animal Feeding Operations know to exist by IDNR. All significant sources seem to have been considered.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Phase I of this TMDL is to reduce phosphorus loading to achieve an in-lake TSITP<70 resulting in TSIs for Secchi depth and chlorophyll of <65. This will be accomplished with a total phosphorus loading capacity of 33,580 pounds per year.

WLA Comment

There are two Minnesota point sources for phosphorus in the watershed. The WLA for Iowa sources is set to zero.

LA Comment

The load allocation based on target TSITP<70 is 30,230 pounds of phosphorus per year. Of this 29,500 pounds are allotted to watershed, generalized load and internal sources and 730 pounds to atmospheric deposition.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is explicit. The MOS is set at 3,350 pounds per year, this is 10% calculated allowable load.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

TSI targets are applied to the growing season when algal blooms are prevalent. The model selected uses growing season mean total phosphorus concentration to calculate an average annual total phosphorus load.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

A presentation was given to the Emmet County Conservation Board on July 1, 2004. The draft TMDL was presented at a public meeting in Esther, IA on November 22, 2004. This meeting was attended by federal and state agencies as well as the Okamanpedan Lake Association. Comments were reviewed and incorporated where appropriate.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Follow-up monitoring will continue to meet, at a minimum, the minimum data requirements established by Iowa's 305(b) guidelines. An assessment will be completed by 2010 containing 3 lake samples per year for three years or 10 lake samples over a two year

period.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

There are no Iowa waste loads included in this TMDL. No allowance for increased pollutant loads was included in this TMDL.